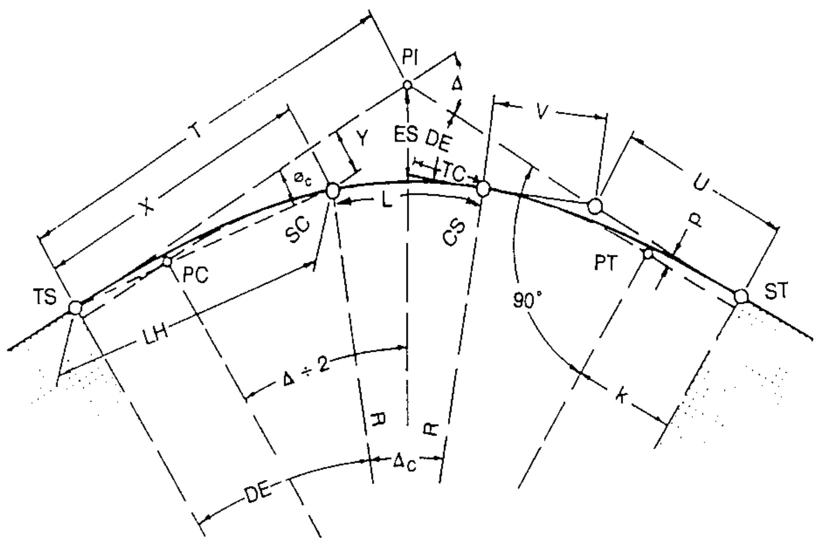
TRANSITION (SPIRAL) CURVES



LS =	Length of Spiral	V =	Short Tangent
L =	Length of Circular Curve	X =	Tangent Distance for SC
R =	Radius of Circular Curve	Y =	Tangent Offset of the SC
TC =	Tangent of Circular Curve	k =	Simple Curve Coordinate(Abscissa)
T =	Tangent Distance	P =	Simple Curve Coordinate(Ordinate)
Δ =	Deflection Angle between the Tangents	$\varnothing_C$ =	Deflection Angle of Spiral Curve
DE =	Spiral Angle	TS =	Tangent to Spiral
Δ_C =	Central Angle between the SC and CS	SC =	Spiral to Circular Curve
ES =	External Distance	CS =	Circular Curve to Spiral
LH =	Long Chord	ST =	Spiral to Tangent
U =	Long Tangent		

SPIRAL CURVE FORMULAS

DE = $(28.6479 \times LS) \div R$
Z = $0.01745 \times DE$
X = $LS \times [1 - (Z^2 \div 10) + (Z^4 \div 216)]$
Y = $LS \times [(Z \div 3) - (Z^3 \div 42) + (Z^5 \div 1320)]$
L = $(R \times \Delta_C) \div 57.2958$

TC = $R \times [\text{Tan}\ (\Delta_C \div 2)]$
Δ_C = $\Delta - (2 \times DE)$
p = $Y - [R \times (1 - \text{Cos}\ DE)]$
k = $X - [R \times (\text{Sin}\ DE)]$

TO CALCULATE T AND ES OF A SIMPLE CURVE WITH EQUAL SPIRALS

T = $[(R + p) \times \text{Tan}\ (\Delta \div 2)] + k$
ES = $[(R + p) \times \text{Exsec}\ (\Delta \div 2)] + p$
ES = $[(R + p) \div \text{Cos}\ (\Delta \div 2)] - R$

TO CALCULATE THE TANGENT DISTANCES OF A SIMPLE CURVE WITH UNEQUAL SPIRALS

Ti_{in} = $[(R + P)_2 \div \text{Sin}\ \Delta] - [(R + p)_1 \times \text{Cot}\Delta] + k_1$
T_{out} $[(R + p)_1 \div \text{Sin}\ \Delta] - [(R + p)_2 \times \text{Cot}\ \Delta l + k$

FIGURE C-7-1 TRANSITION (SPIRAL) CURVES*

* Rev. 7/12